

David V. Svintradze, Ph.D

CONTACT
INFORMATION

[Department of Mathematics&Statistics](#)
[University of Massachusetts Lowell](#)

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Web Sites: [New Vision University](#),

Tbilisi State University

Theoretical Biophysics	2016–2017
General Physics for Biologists	2014–2016
General Physics for Chemists	2014–2016
Classical Mechanics (including Calculus)	2012–2015
General Physics/Electromagnetism (including Calculus)	2012–2015
Molecular Biophysics	2012–2013
Methods in Molecular Biophysics	2012–2013
Quantum Chemistry for Biophysicist	2012–2013
Basics in Medical Physics and Biophysics	2012–2013

Ilia State University

Molecular Physics and Biophysics	2007
Thermodynamics of Biological Systems	2007

SERVICE

Board Committee Member for Ph.D dissertations	2016–2017
Committee on Conference and Faculty Appeal	2015–2016
Board Committee Member for Graduate and Undergraduate Studies	2012–2016
Scientific Content Reviewer for Peer-Reviewed Publications:	
Biophysical Journal, Physical Review Fluids, Journal of Theoretical Biology, International Journal of Biological Macromolecules, Polymer Degradation and Stability, Journal of Molecular Biology, Biomacromolecules, European Polymer Journal, Nanotechnology Reviews	
Peer-Reviewed Journal Editorial Board Member:	
Journal of Nanoscience with Advanced Technology	2016–2017
Review Editor for membrane physiology and biophysics, subsection for Frontiers in Physics, Frontiers in Physiology and Frontiers in Cell and Developmental Biology	2021–

CONFERENCES, SEMINARS, INVITED TALKS

Department of Theoretical Physics, Niels Bohr’s Institute, University of Copenhagen	
Informal Seminar	
Talk Title: Generalizing General Relativity.	2024
Niels Bohr’s Institute, University of Copenhagen	
Invited Seminar	
Talk Title: Generalizing Ostwald Ripening.	2024
Annual Meeting of the Biophysical Society, BPS2024	
Poster: Shape dynamics driving force for living matter formation.....	2024
Membrane Fusion and Budding - Estes Park	
Poster: Membrane Dynamics Control Fusion, Fission and Patterning.	2023
International Conference on Biological Physics, ICBP 2023	
Speaker, IUPAP Travel Awardee	
Talk Title: Phase Separation as Driving Force for Living Matter Formation.....	2023
Department of Physics, University of Massachusetts Lowell	
Colloquium Talk	
Talk Title: Moving Manifolds and Young – Laplace, Kelvin, and Gibbs–Thomson Problems.	2022
Niels Bohr’s Institute, University of Copenhagen	
Invited Seminar	
Talk Title: Generalizing the Gibbs-Thomson Equation.	2022

American Association for Advances in Functional Materials, AAAMF UCLA	
Invited Speaker (declined)	
Talk Title: Does Invisibility Cloaks Really Exist?	2021
Annual Meeting of the Biophysical Society, BPS2021	
Virtual Travel Award	
Poster: Generalization of the Gibbs-Thomson Equation and Predicting Melting Temperatures of Biomacromolecules in Confined Geometries	2021
International Conference on Nano Research and Development	
Invited Speaker, Chair of Nano Physics, Advisory Board Member (declined)	
Talk: Kelvin Equation at Nano-scale for Arbitrarily Curved Molecular Surfaces	2020
Annual World Congress of Nano Science and Technology	
Invited Speaker	
Talk: Little Droplets and Origin of Life	2019
Global Summit of Physics	
Invited Speaker	
Talk : Surface Dynamics	2019
Annual Meeting of the Biophysical Society, BPS2019	
Late Poster: Surface Dynamics	2019
Group Retreat Oberwiesenthal, Max Plank Institute	
Invited Speaker , Biological Physics, Max Planck Institute for the Physics of Complex Systems	
Talk: Moving Manifolds and Gravitational Electrodynamics	2018
Aspen Center for Physics , Seminar: Active Biological Matter	
Simons Recipient, Independent Physicist Supported by Simons Foundation	
Talk: Moving Manifolds in Electromagnetic Field	2017
Annual Meeting of the Biophysical Society, PBS2017 (Platform Speaker)	
Co-Chair for Membrane Dynamics Session	
Talk Title: Geometric Diversity of Living Organisms and Viruses	2017
ENS Third Scientific Conference in Exact and Natural Sciences (Plenary Talk)	
Talk: Micelles Hydrodynamics	2016
Annual Meeting of the Biophysical Society, BPS2015	
International Travel Award	
Poster: Moving Macromolecular Surfaces Under Hydrophilic/Hydrophobic Stress	2015
ENS Second Scientific Conference in Exact and Natural Sciences (Plenary Talk)	
Talk: Conformational Motion in Redox Sensitive Gene Regulatory Protein	2014
ENS First Scientific Conference in Exact and Natural Sciences (Plenary Talk)	
Talk: Conformational Motion in OxyR	2013
Annual Meeting of the Biophysical Society, BPS2010	
Poster: Hydrophobic-Hydrophilic Interactions	2010
Annual Meeting of the Biophysical Society, BPS2009	
Poster: Conformational Motion of Biological Macromolecules	2009
Annual Meeting of the Biophysical Society, BPS2008	
International Travel Award	
Poster: Entropy Definition of Non-equilibrium Biological Macromolecules	2008
Biophysics and the Challenges of the Emerging Threats	
Poster: Geometry of Water Molecules Hydrogen Bonds and Collagen-DNA Complex	2007
Frontiers in Chemical Biology: Single Molecule , Cambridge University	
Poster: Water Bridges in Collagen-DNA Complex	2006

Annual Meeting of the Biophysical Society, BPS2006

International Travel Award

Poster: A mechanism of interaction between collagen triple helix and DNA double helix in aqueous solution **2006**

European Biophysics Congress

Poster: Complex Between Collagen Triple Helix and DNA Double Helix **2005**

**PERSONAL
INFORMATION**

Birth Date: 11.14.1981

Marital Status: Married, Spouse: Shorena Ukleba, Daughter: Lile Svintradze

**RESEARCH
INTERESTS**

I am interested in new physics inspired by biological processes, such as the conformational motion of biological macromolecules and cell motility. Major inspiration from biological processes is non-equilibrium statistical physics, sometimes referred to as non-equilibrium thermodynamics, or as it becomes popular nowadays, stochastic thermodynamics and other, what I recall, shape dynamics. Both developments required new mathematical tools, and as it was consequently found, new calculus coming from Langevin dynamics, now known as Ito calculus, and for shape dynamics, new mathematical developments of differential geometry, now referred to as calculus of mofv calcu[-340(dyna3aysics,)] TJa3aysicslopme22h-aysics,

7. **David V. Svintradze**, and George M. Mrevlishvili. Fiber molecular model of collagen triple helix and DNA double helix complex in aqueous solution. *Asian Journal of Biochemistry* **1**, 18–27 (2006).
6. **David V. Svintradze**, and George M. Mrevlishvili. Fiber molecular model of atelocollagen-small interfering RNA (siRNA) complex. *International Journal of Biological Macromolecules* **37**, 283–286 (2005).
5. George M. Mrevlishvili, and **David V. Svintradze**. DNA as a matrix of collagen fibrils. *International Journal of Biological Macromolecules* **36**, 324–326 (2005).
4. **David V. Svintradze**, and George M. Mrevlishvili. Complex between triple helix of collagen and double helix of DNA in aqueous solution. *European Biophysics Journal* **34**, 729a (2005).
3. George M. Mrevlishvili, and **David V. Svintradze**. Complex between triple helix of Collagen and double helix of DNA in aqueous solution. *International Journal of Biological Macromolecules* **35**, 243–245 (2005).
2. George M. Mrevlishvili, and **David V. Svintradze**. DNA as a matrix of collagen fibrils in collagen diseases. *Les Nouvelles Dermatologiques* **24**, 53a (2005).
1. George M. Mrevlishvili, and **David V. Svintradze**. Supramolecular self-assembly systems in biochemistry: Complex between triple helix of Collagen and double helix of DNA in aqueous solution. *Bulletin of the Georgian Academy of Sciences* **169**, 367–379 (2004).

FUNDING

Erasmus+ Mobility Grant Between University of Copenhagen and New Vision University co – Principal Investigator (25, 000 Euro)

Partnership and Mobility Agreement Between UCPH and NVU 2023–2026

Shota Rustaveli National Science Foundation of Georgia (SRNSFG)

Principal Investigator, Grant No. STEM-22-365 (140, 000 Gel)

Phase Separation in Biology 2022–2024

New Vision University (NVU)

Principal Investigator, Internal Grant (240, 000 Gel)

Cell Shape Dynamics 2022–2025

Shota Rustaveli National Science Foundation of Georgia (SRNSFG)

Principal Investigator, Grant No. FR-21-2844 (240, 000 Gel)

Moving Manifolds 2021–2024

Shota Rustaveli National Science Foundation of Georgia (SRNSFG)

Principal Investigator, Grant No. MG-TG-19-043 (10, 000 Gel)

Surface Dynamics 2019

NATO Public Diplomacy Division's Co-Sponsorship Grants

Co-Investigator, Grant No. CBPEAP.CLG 982215 (10, 000 Eur)

Mechanisms of the Influence of UV Irradiation on
Collagen and Collagen-DNA Functional Complex 2006–2008